Acridea

DEPARTMENT OF BIOPHYSICS

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Hills Road
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Dear Francis:

While it was a delight, as always, to visit Cambridge in August, I felt much regret to have been able to come only during the holidays.

I am continuing work related, I hope, to the mechanism of acridine mutagenesis. I was tempted to say actively continuing, but the possibilities for intense activity here might seem sheer sloth elsewhere. For what I suppose are fairly obvious reasons, it seemed worthwhile to examine the dependence of the rate of induction of suppressors on the concentration of acridine during growth. The cooperative participation of more than one acridine might be required to generate phase errors in pairing of more than one step, and two would be required to generate a small segment one step out of phase bounded by correctly paired segments. The possibility that both the plus and minus mutation types are deletions, differing in whether an odd or even number of nucleotides are deleted, seemed worth considering. I mentioned to Sydney in Gatlinburg that we had already found a second power dependence for suppressors of T3, and more recently we have found what seems to be a pretty good third power dependence for two other mutants that Leslie sent us. I understand that both Alice Orgel and Jan Drake have noticed that the yield of mutants rises steeply above some minimum acridine concentration. We are now trying to get past some of the more obvious questions and ascertain whether the power dependence is invariant with respect to simple physiological variables. Assuming that this is so, I would like to examine a sufficiently large number of mutants carefully to determine whether there is indeed a correlation between the value of the power dependence and the sign of the mutation or the length of the apparent deletion span on the fine structure map. If you are not pursuing any closely related aspect, I wonder if you would permit us to use your collection of mutants. It would not seem unreasonable to me if you were engaged in a similar sort of thing and had to give a negative reply. If, on the other hand, there is no objection, it seems to me that there would be a logistic problem, since the amount of labor in preparing a large number of stocks for shipment is far from negligible. Perhaps Leslie, or someone else, would like to undertake the job after hours for some reasonable compensation, or I could come and do it myself, or some other scheme might be imagined.

At any rate I should be interested in any comments you might have on the project. I should add that we also hope to see very soon whether the outside binding of dye aggregates (Bradley binding) which the power law vaguely suggests, is in any way related. Our other project, based on the crossover hypothesis, is plodding ahead slowly, but we are nowhere near the critical experiments yet.

I hope you may be able to visit on the way to California.  Best regards
to Odile, Sydney. Leslie, Jan, Frank, etc., etc.

Sincerely,

Leonard

LL/bvb